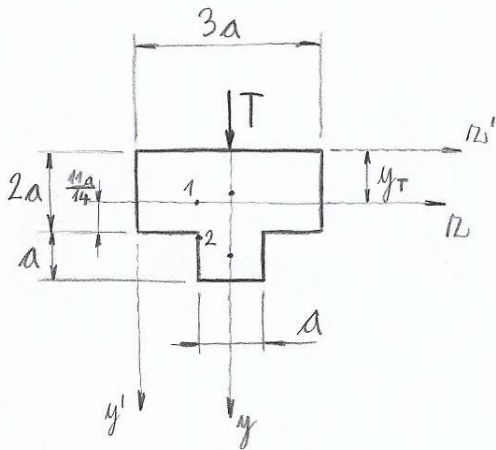


Dimenzionirajte navedeni prerez!



$$T = 40 \text{ kN}$$

$$\tau_{\text{DOP}} = 85 \text{ MPa}$$

$$a = ?$$

$$y_T = \frac{a \cdot 3a \cdot 2a + 2,5a \cdot a \cdot a}{3a \cdot 2a + a \cdot a} = \frac{17}{14} a \approx 1,2143 \cdot a$$

$$J_z = \frac{3a \cdot (2a)^3}{12} + \left(\frac{17}{14}a - a\right)^2 \cdot 6a^2 + \frac{a^4}{12} + \left(2,5a - \frac{17}{14}a\right)^2 \cdot a^2$$

$$J_z = \frac{337}{84} a^4 \approx 4,0119 \cdot a^4$$

dimenzioniramo v dveh točkah: ① in ②:

$$\sigma_{xy} = \frac{T \cdot S_{ye}}{b \cdot J_z} \leq \tau_{\text{DOP}}$$

točka ①:

$$b = 3a$$

$$S_{ye_1} = \frac{17}{28} a \cdot 3a \cdot 2a = \frac{51}{14} a^3 \approx 3,643 \cdot a^3$$

$$\frac{40000 \cdot 51 \cdot a^3 \cdot 84}{14 \cdot 3a \cdot 337 a^4} \leq 85 \Rightarrow \frac{12106,825}{a^2} \leq 85$$

$$a \geq 11,935 \text{ mm}$$

točka ②:

$$b = a$$

$$S_{ye_2} = \left(\frac{11}{14}a + \frac{a}{2}\right) \cdot a^2 = \frac{9}{7} a^3 \approx 1,2857 \cdot a^3$$

$$\frac{40000 \cdot 9 \cdot a^3 \cdot 84}{7 \cdot a \cdot 337 \cdot a^4} \leq 85 \Rightarrow \frac{12818,99}{a^2} \leq 85$$

$$\underline{\underline{a \geq 12,2805 \text{ mm}}}$$

Torej je kritična točka ②.